WHAT IS CLAIMED IS:

1. A method of removing one or more particle(s) adhered to a surface of a sample, comprising:

arranging an energy transfer medium under and around the one or more particle(s);

irradiating the one or more particle(s), the surface and/or the energy transfer medium with laser energy;

absorbing sufficient energy in the one or more particle(s), the surface, teh substrate, and/or the energy transfer medium to dislodge the one or more particle(s); and

creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface.

2. The method according to claim 1, wherein said irradiating step comprises irradiating the energy transfer medium with laser energy, and said absorbing step comprises absorbing sufficient energy in the energy transfer medium to cause explosive evaporation thereof with sufficient force to dislodge the one or more particle(s).

3. The method according to claim 1, wherein said step of creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface comprises heating the sample.

4. The method according to claim 1, wherein said step of creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface comprises cooling a plate disposed adjacent to the surface of the sample.

5. The method according to claim 1, wherein said step of creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface comprises both heating the sample and cooling a plate disposed adjacent to the surface of the sample.

6. The method according to claim 2, wherein the laser energy is sufficient to be absorbed by the energy transfer medium, either directly or by conduction from the substrate.

7. The method according to claim 2, wherein the energy transfer medium is at least one of a uniform layer of thickness, absorbed into interstices under and around the one or more particle(s) to be removed, and a combination thereof.

8. The method according to claim 7, wherein the energy transfer medium is a uniform layer of thickness.

9. The method according to claim 7, wherein the energy transfer medium is absorbed into interstices under and around the one or more particle(s) to be removed.

10. A method of removing one or more particle(s) adhered to a surface of a sample, comprising:

irradiating the one or more particle(s)/sample combination with laser energy;

absorbing sufficient energy in the one or more particle(s)/sample combination to dislodge the one or more particle(s); and

creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface.

11. The method according to claim 10, wherein said step of creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface comprises heating the sample.

12. The method according to claim 10, wherein said step of creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface comprises cooling a plate disposed adjacent to the surface of the sample.

13. The method according to claim 10, wherein said step of creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface comprises both heating the sample and cooling a plate disposed adjacent to the surface of the sample.

14. Apparatus for removing one or more particle(s) adhered to a surface of a sample, comprising:

means for arranging an energy transfer medium under and around the one or more particle(s);

means for irradiating the one or more particle(s), the surface, the sample and/or the energy transfer medium with laser energy;

means for absorbing sufficient energy in the one or more particle(s), the surface, the sample and/or the energy transfer medium to dislodge the one or more particle(s); and

means for creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface.

15. Apparatus for removing one or more particle(s) adhered to a surface of a sample, comprising:

means for irradiating the one or more particle(s)/sample combination with laser energy;

means for absorbing sufficient energy in the one or more particle(s)/sample combination to dislodge the one or more particle(s); and

means for creating a temperature gradient adjacent to the surface to prevent the one or more particle(s) from redepositing on the surface.

16. Apparatus for removing one or more particle(s) adhered to a surface of a sample, comprising:

a plate configured to support one or more particle(s)/sample and/or energy transfer medium combination;

a laser configured to irradiate the one or more particle(s)/sample and/or energy transfer medium combination with laser energy; and

at least one temperature control unit configured to create a temperature gradient adjacent to the one or more particle(s)/sample to prevent a particle dislodged from the surface of the sample from redepositing on the surface.

17. The apparatus according to claim 16, further comprising:

a plate positioned a predetermined distance from the support; and

a second temperature control unit configured to work in cooperation with the at least one temperature control unit to create a temperature gradient adjacent to the

support to prevent a particle dislodged from the surface of the sample from redepositing on the surface.

18. An apparatus configured to accelerate particles, comprising:

a source of laser energy;

a substrate having a surface and a predetermined shape and configured to receive at least a portion of the laser energy from said source;

a plurality of particles arranged on said surface; and

an energy transfer medium disposed upon said surface and configured to absorb at least a portion of said laser energy from said source, whereby said plurality of particles are accelerated from said surface.

19. A particle deposition apparatus, comprising:

an apparatus configured to accelerate particles according to claim 18; and

a target substrate configured to receive particles thereon.

20. The particle deposition apparatus of claim 19, further comprising:

a cold substrate configured to receive at least a portion of said laser energy from said source; and

a warm target substrate configured to receive particles thereon.

21. The particle deposition apparatus of claim 19, wherein said substrate and said target substrate are configured to effect dry particle deposition on said target substrate.